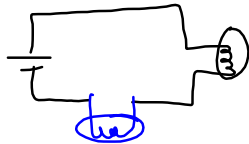


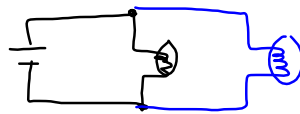
1. What happens to the brightness of the lightbulbs in the following circuits:

a)



$$I = \frac{V}{R}$$

b)

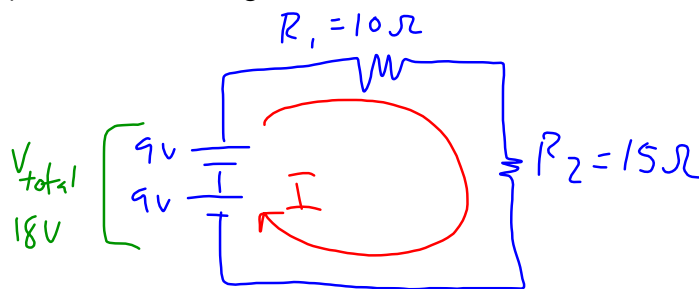


2. Draw the following circuit: TWO 9V batteries, with a 10-ohm and 15-ohm connected in series.

a) Calculate total resistance.

b) Calculate current.

c) Calculate voltage across each resistor.



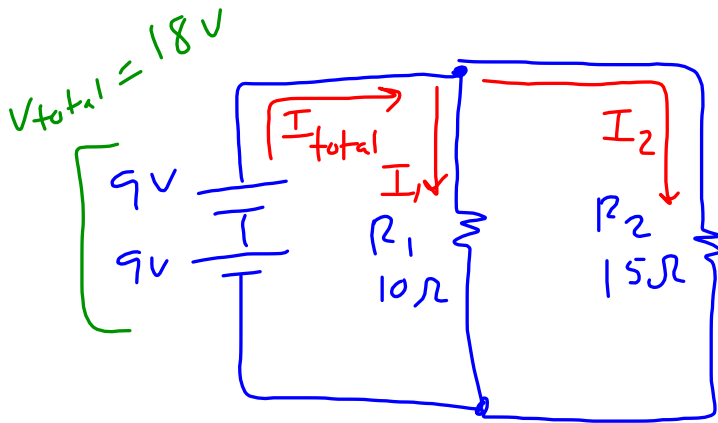
$$\begin{aligned} a) \quad R_{total} &= R_1 + R_2 \\ &= 10\Omega + 15\Omega \\ &= 25\Omega \end{aligned}$$

$$\begin{aligned} b) \quad I &= \frac{V_{total}}{R_{total}} \\ &= \frac{18V}{25\Omega} \\ &= 0.72A \end{aligned}$$

$$\begin{aligned} c) \quad V_1 &= IR_1 = (0.72A)(10\Omega) = 7.2V \\ V_2 &= IR_2 = (0.72A)(15\Omega) = 10.8V \\ &\quad \underline{\quad 18V \quad} \end{aligned}$$

TWO 9V batteries (in series) are connected in parallel with a 10-ohm and 15-ohm resistor.

- Find the current in each branch.
- Find the total current in the circuit.



$$\begin{aligned} I_1 &= \frac{V_{total}}{R_1} \\ &= \frac{18V}{10\Omega} \\ &= 1.8A \end{aligned}$$

$$\begin{aligned} I_2 &= \frac{V_{total}}{R_2} \\ &= \frac{18V}{15\Omega} \\ &= 1.2A \end{aligned}$$

$$\begin{aligned} I_{total} &= I_1 + I_2 \\ &= 1.8A + 1.2A \\ &= 3.0A \end{aligned}$$